



SOCIETY OF OBSTETRIC MEDICINE OF AUSTRALIA AND NEW ZEALAND

The SOMANZ

Position Statement on the Management
of Nausea and Vomiting in Pregnancy
and Hyperemesis Gravidarum

Executive Summary

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These are the updated recommendations of a multidisciplinary working party convened by the Society of Obstetric Medicine of Australia and New Zealand. They reflect current medical literature and the clinical experience of members of the working party. This Executive Summary and Treatment Algorithms (1 and 2) summarise the key recommendations. These should be read in conjunction with this complete Position Statement which also includes a Patient Information Leaflet and a template for an Individual Patient Management Plan [<https://www.somanz.org/guidelines/>].

The original version of this document was published in 2019 (1). There are no substantive changes in the recommendations, apart from a revised definition of hyperemesis gravidarum, but it includes additional research and data regarding assessment and management published between 2019 and 2023. The treatment information and pathways have been updated for clarity based on feedback from a number of sources.

The authors declare they have no conflicts of interest.

The original 2019 Position Statement was endorsed by the following organisations:

- Royal Australian and New Zealand College of Obstetrics and Gynaecology (RANZCOG)
- Royal Australasian College of Physicians (RACP)
- Royal Australasian College of General Practitioners (RACGP)
- Australasian College for Emergency Medicine (ACEM)

RECOMMENDATION	DESCRIPTION
Evidence based (EBR)	Where sufficient evidence was available
Consensus based recommendations (CBR)	Where there was insufficient evidence, the expert Position Statement development group made clinical consensus recommendations
Clinical practice points (CPP)	Important implementation and other issues (such as safety, side effects or risks) arose from discussion of evidence based or clinical consensus recommendations
LEVELS OF EVIDENCE	DESCRIPTION
I	A systematic review of Level II studies
II	A randomised controlled trial
III	Any non-randomised study(ies) including comparative study with concurrent controls, cohort, case-control, historical controls
IV	Case series

Table 1: Definition of recommendations and simplified levels of evidence (4)

What are the definitions of NVP and HG?

NVP is defined as symptoms of nausea, vomiting and/or dry retching caused by pregnancy, with symptoms commencing in the first trimester without an alternate diagnosis. All women should be asked about NVP at each visit between 4 and 16 weeks.

A recently developed International consensus definition for hyperemesis gravidarum (HG), the Windsor definition, requires all of the following criteria be met (3):

1. Symptoms starting in early pregnancy <16 weeks gestation.
2. Severe nausea and/or vomiting
3. Inability to eat and/or drink normally
4. Strongly limiting daily activities

Signs of dehydration were deemed contributory but not mandatory.

The diagnosis of HG is not based on the PUQE-24 (see below) or any other scoring system. Although there may be a continuum between these two conditions, it is critical to distinguish HG from NVP as the management and potential maternal and fetal complications differ.

Symptom scores can be used to assess NVP severity, although any scoring system will not necessarily reflect an individuals' total symptom burden. Scoring systems should not replace a holistic enquiry of women regarding ability to eat and drink, weight and hydration status, physical and mental functioning, and overall impact of NVP. The most used scoring system is the Motherisk **P**regnancy-**U**nique **Q**uantification of **E**mesis and **N**ausea (PUQE-24) scoring index (Table 2) (4).

1. In the last 24 hours, for how long have you felt nauseated or sick to your stomach?				
Not at all (1)	1 hour or less (2)	2-3 hours (3)	4 to 6 hours (4)	More than 6 hours (5)
2. In the last 24 hours, have you vomited or thrown up?				
I did not throw up (1)	1 to 2 (2)	3 to 4 (3)	5 to 6 (4)	7 or more times (5)
3. In the last 24 hours, how many times have you had retching or dry heaves without throwing up?				
None (1)	1 to 2 (2)	3 to 4 (3)	5 to 6 (4)	7 or more times (5)

Table 2: Motherisk PUQE-24 scoring system (4)

The PUQE-24 score correlates closely with the woman's own estimate of overall physical and mental well-being ($P < 0.001$), hospitalization and emergency room visits as well as readmission risk (4-7).

Severity of NVP:

1. Mild: PUQE-24 = 4-6
2. Moderate: PUQE-24 = 7-12
3. Severe: PUQE-24 ≥ 13 and/or the inability to eat and drink, significant weight loss and/or significant limitation of physical or mental functioning, irrespective of the PUQE-24 score

An alternate scoring system, the HyperEmesis Level Prediction (HELP) Score, measures 12 parameters including number of voids per day, ability to function, mood, oral intake, ability to tolerate oral medications, weight loss and the change in symptoms over a week (8). The utility of the longer and more complex HELP tool has been questioned and further studies are awaited (5).

Any validated scoring system can be used to guide initial treatment, but subsequent management decisions should be based on the response to treatment as per the principles of management discussed below.

What is the incidence and natural history of NVP and HG?

Nausea and vomiting are common symptoms of pregnancy with the global prevalence estimated risk of any NVP of 69%, and nausea alone 33% (9). The incidence of hyperemesis gravidarum (HG) is much lower than NVP at 1.1%, depending on the definitions used. Both NVP and HG typically have their onset between the 4th and the 10th week of gestation, with the majority experiencing resolution by 20 weeks gestation although up to 24% of women described NVP even in late pregnancy and in approximately 10% of HG patients, symptoms persisted throughout pregnancy (9, 10). The incidence of NVP peaks between 8-16 weeks and starts to fall from 12 weeks (11). In another prospective recent study, only 50% of women reported relief of their symptoms by 14 weeks' gestation although 90% had relief by week twenty two (12).

What is the cause of NVP and HG?

The etiology of NVP and HG remains unclear but is likely to be multifactorial. The role of human Chorionic Gonadotrophin (hCG) has been discredited with increased understanding of other potential mediators (13). A genetic basis is suggested by heritability estimates of 73% [57–84%] for occurrence, 51% [36–63%] for duration and 53% [38–65%] for severity of NVP (14). The association with family history and the recurrence risk in subsequent pregnancies is also suggestive of a genetic etiology (15, 16).

Conditions such as trophoblastic disease, multiple pregnancy and the presence of a female fetus, have been associated with increased severity of NVP (17). Helicobacter Pylori infection is common in pregnant women, both with and without HG, (18) although a meta-analysis, did suggest that infection was associated with an increased likelihood of HG during pregnancy (pooled OR 1.3 (95% CI 1.2-1.5 p < .001) (19).

Increasing evidence supports the role of GDF15 as a mediator of HG. This hormone is highly expressed by the placenta and is a regulator of physiological body weight and appetite via central mechanisms as well as being a significant mediator of cancer anorexia and cachexia. Whole exome-wide sequencing has demonstrated a mis-sense variant within GDF15 associated with HG and equally importantly, failed to identify any variants in the HCG gene (20) An association has also been demonstrated with variants in the ryanodine receptor (RyR2) gene which encodes an intracellular calcium release channel involved in vomiting and cyclic-vomiting syndrome. It is also a thyroid hormone target gene which is consistent with the association of thyroid dysfunction and HG (21).

What investigations are required for women with NVP?

History and physical examination should be directed towards exclusion of alternate diagnoses, assessment of dehydration, percentage weight loss and nutritional status. Psychosocial screening with a validated pregnancy screening tool should be part of the assessment of women with significant NVP or HG. Screening should be repeated as necessary with appropriate referrals made.

- Patients with mild-moderate nausea and vomiting of pregnancy (PUQE-24 \leq 12) where symptoms are not suspicious for HG or another diagnosis do not need investigation (22) **CBR**
- Women with severe NVP (PUQE-24 \geq 13), suspected HG or significantly impaired oral intake should have the following at first presentation and repeated as per full guideline recommendations:
 1. Sodium, potassium, chloride, bicarbonate, magnesium, urea, creatinine, calcium and phosphate **EBR**
 2. Bilirubin, Alanine Transaminase (ALT), Aspartate Aminotransferase (AST), Albumin **CBR**
 3. Obstetric ultrasound to exclude multi-fetal or gestational trophoblastic disease **CBR**
 4. Thyroid stimulating hormone (TSH) where indicated [see Full Guideline for further recommendations regarding investigation and treatment of NVP/HG related thyroid disease.] **CBR**
 5. Midstream urine microscopy and culture, white cell count if symptoms or signs of urinary tract infection **EBR**
- Patients not requiring admission to hospital or treatment with IV fluids: electrolytes should be remeasured only if their condition deteriorates **CPP**
- Women requiring repeated IV fluids or admission to hospital: electrolytes should be measured daily or less frequently if stable after commencement of therapy **EBR**
- More frequent monitoring of electrolytes (at least daily) is required for women with diabetes or other significant underlying conditions **CPP**

Who should care for women with NVP?

All clinicians involved in the care of pregnant women, particularly general practitioners (GPs), midwives as well as obstetricians need to take responsibility for ensuring women have access to appropriate advice and care. Women often consult their community pharmacists and they may be an important source of information and advice regarding treatment in mild to moderate cases. Women with more severe symptoms are often seen in Hospital Accident and Emergency Departments.

- Maternity caregivers and pharmacists should consult and escalate care as needed to clinicians with experience in managing severe NVP and HG e.g. at tertiary hospitals or via telemedicine.
- Accident and Emergency staff have an important role to play in initial assessment and management as well as ensuring appropriate care disposition for ongoing treatment.
- Clinical assessment and care of women with HG should be undertaken by clinicians with experience in recognising the signs and symptoms of HG, and with expertise in managing this condition effectively.
- Consideration should be given to contacting experienced practitioners via an appropriate referral pathway (e.g. tertiary hospital) or via telemedicine.
- We recommend consultation with a dietician for all women requiring inpatient care and for women with protracted symptoms of severe NVP, especially where there is evidence of malnutrition.
- Consider review by a Social Worker and/or the Perinatal Mental Health Team

CBR

CPP

EBR

CPP

CPP

CPP

Where should management for NVP and HG take place?

Community care should be possible in the majority of women who are able to tolerate at least some oral intake and medication (see Treatment Algorithm).

In women with severe NVP or HG (PUQE-24 score ≥ 13) or NVP with inability to tolerate oral intake; inpatient care, at least initially, is indicated.

- If women are unable to tolerate oral treatment in the community setting, parenteral fluid resuscitation and anti-emetic therapy may be given at (23):
 - o Day Stay facilities: hospital (maternity or general), general practices, private infusion centres
 - o Hospital in the Home
 - o Accident and Emergency Departments

EBR

CBR

All of these sites should seek to provide management in a comprehensive, empathetic environment with advice from a clinician with expertise in treating NVP and HG.

During outpatient management, women require regular review, at least every 1 to 2 weeks, by their lead clinician to ensure appropriate titration of therapy.

CPP

Admission

- Inpatient or Hospital in the Home management should be considered for women with severe NVP or HG (PUQE-24 score ≥ 13) *not* responsive to ambulatory management.
- **Ensure review by a dietician**
- **Consider review by a Social Worker and/or Perinatal Mental Health Team**
- Inpatient management is required at least initially for women with:
 - o Severe electrolyte disturbance e.g. Potassium < 3.0 mmol/L
 - o Significant renal impairment or acute kidney injury: Creatinine > 90 mmol/L
 - o Concurrent significant co-morbidity e.g. Type 1 diabetes, poorly controlled epilepsy, transplant recipients, or others requiring essential medications
 - o Malnutrition/continuing significant weight loss despite therapy or starvation ketoacidosis
 - o Associated conditions requiring inpatient management e.g. infection, haematemesis, refeeding syndrome

EBR

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Discharge will be indicated when:

- Appropriate oral pharmacotherapy has been tolerated
- Adequate oral nutrition and hydration has been tolerated
- Management of concurrent conditions is completed

In all cases, the lead clinician needs to communicate a clearly documented plan for ongoing management to both the patient (See Individual Patient Management Plan below) and the treating team members including:

- details of therapy
- arrangements for re-assessment including clinical and any diagnostic investigations
- arrangements for ongoing ante-natal care

CPP

What is the best treatment for NVP and HG?

Numerous systematic reviews have attempted to assess the heterogeneous and limited high level evidence for the efficacy and safety of treatments for NVP and HG (24-32). In assessing the response to treatment, the fluctuant nature of NVP and the impact of progressive gestation must be considered, as spontaneous resolution is the norm. Similarly, a number of symptoms of normal pregnancy could be misinterpreted as adverse responses to treatment including bowel disturbance, gastroesophageal reflux, sedation, urinary symptoms as well as vaginal bleeding, abdominal/pelvic pain and miscarriage.

When treating NVP and HG, the woman and her family must be provided with accurate and balanced information to ensure shared decision making which allows them to weigh the benefits of treatment against any maternal or fetal risks and make decisions in accordance with their own values and goals.

Interventions to improve nausea and fatigue include modification of working patterns, exercise, daytime sleeps and an earlier bedtime may benefit some women, but the evidence is weak.

CBR

Acupressure with wrist bands on the P6 point may reduce symptoms of NVP and HG (33, 34).

EBR

There is no evidence to support specific diets or hypnosis for the treatment of NVP.

Experimental therapies such as mirtazapine or gabapentin do not have sufficient evidence, at this time, for their routine use.

EBR

Cannabis/Cannabinoids are contraindicated in pregnancy because of an increased risk of fetal and neonatal adverse effects including preterm birth, decreased fetal growth, and death within the first year (35, 36). They should not be used for the management of NVP or HG.

EBR

What medications are effective for treatment of NVP and HG?

The principles of holistic management of NVP and HG must include:

- Interventions to reduce nausea, retching and vomiting (Tables 3a,b,c, 4,5)
- Management of associated gastric dysmotility i.e. gastro-oesophageal reflux and constipation (Table 6)
- Maintenance of hydration, fluid and electrolyte replacement (Table 7)
- Maintenance of adequate nutrition including provision of vitamin supplements where required
- Psychosocial monitoring and support
- Monitoring and prevention of side effects and adverse pregnancy and fetal outcomes
- **In women who are immobile or have additional risk factors for thromboembolism, thromboprophylaxis should be considered unless there are specific contraindications**

CPP

EBR

Considerations for treatment choices in NVP and HG:

- Establish targets for symptom relief i.e. ability to eat and drink adequately without necessarily complete resolution of NVP
- Discontinue prenatal multivitamins if they are contributing to NVP: the two critical micronutrients which should be continued if possible are iodine (150 mcg per day) and folate (at least 400 mcg per day until 10 weeks)
- The timing of administration of pharmacological therapy should reflect the woman's symptom pattern
- All routinely prescribed antiemetics are more effective than placebo (37). When comparing 4 commonly used antiemetics (ondansetron versus metoclopramide versus promethazine or prochlorperazine), there was no difference in response in terms of time from administration to discharge (38). There is no convincing evidence of superiority of any particular drug (37)
- The choice of antiemetic should be individualised, based on the woman's symptoms, previous response to treatment and potential side effects (Table 3a, 3b, 3c, 4)
 - o Mild-moderate initial treatment: Start with ginger ± B6, add oral antihistamine or dopamine antagonist if needed
 - o Moderate-severe NVP, inadequate response to initial treatment or excessive sedation: consider add/substitute oral serotonin antagonist at least during daytime. Add acid suppression therapy. Manage/prevent constipation with laxatives. If not tolerating oral treatment, substitute with IV/IM equivalent if available.
 - o Severe-Refractory NVP or HG: consider corticosteroids in addition to other antiemetics. Intensify acid suppression. Continue laxatives as needed. Admit for parenteral therapy if required.
- When selecting pharmacotherapy for NVP and HG, the prescriber needs to make a rational assessment of maternal and fetal benefit versus risk, noting that in the vast majority of cases benefit will outweigh risks. Appropriate counselling and shared decision-making with the woman should occur prior to the commencement of therapy.
- Any potential increase in the risk of congenital malformation needs to be compared with the background rate of congenital malformations which was 3.1% in 2002–2003 (39).
- Metoclopramide is generally recommended as a first line anti-emetic agent. There are concerns regarding extrapyramidal side effects, particularly with prolonged high dose use. These adverse events are rare in women aged 18-44 and almost always occur in the first 5 days of use with a much lower rate (1.2%) after this (40). Women initiated on metoclopramide should be closely monitored and informed about the symptoms and risks of extrapyramidal effects especially during the first few days of treatment and advised to use metoclopramide for the shortest possible duration and lowest effective dose (41). A recent meta-analysis has concluded there is no increased risk of congenital malformation with the use of metoclopramide (OR, 1.14 [0.93–1.38]) (42)
- There is inconsistent evidence regarding the risk of congenital malformation with the use of ondansetron and corticosteroids in the first trimester

CPP

EBR

CPP

EBR

EBR

CBR

EBR

Ondansetron: The use of ondansetron has not been associated with any overall increased risk of congenital malformations (43). Although the data is inconsistent, ondansetron use during embryogenesis may be associated with a very small increased risk of and cleft palate (up to 3 additional cases per 10000 exposures) (44). Ondansetron is therefore recommended for second line use.

Corticosteroids: The very small amount of gestation specific data for corticosteroid exposure during the relevant period of embryogenesis (starting during the 5th week of gestation, completed by the 10th week (45)) provides no consistent evidence to support an increased risk of oral cleft or other congenital malformation (LOE-II) (46-52) with a worst case scenario of less than 1 additional case of oral cleft per 1,000 exposed pregnancies. Major teratology

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services have now reassessed their advice and state that : “ If there is an increased chance of oral cleft, it appears to be very small, and most pregnancies would not be affected” (53). Corticosteroids should be considered third line treatment after non-pharmacological agents and antiemetics and reserved for more severe NVP or HG (LOE- III). Appropriate counselling and monitoring, with written instructions must be provided with the aim of limiting dose, duration and adverse effects.

- Oral therapy is usually commenced first and parenteral or subcutaneous treatment reserved for refractory cases (Table 5). Rectal therapy may have a role but no options are currently available.
- Written instructions should be given regarding titrating therapy (up and down) as symptoms fluctuate, deteriorate or improve (see Individual Management Plan below)
- Regular review of therapy is required in all cases: the natural history of NVP and HG is for spontaneous resolution
- Many women with vomiting in pregnancy experience symptoms of gastro-oesophageal reflux (GOR) as well, and the presence of such symptoms is associated with more severe NVP. The treatment of GOR has been associated with reduced PUQE-24 scores and improved quality of life scores (55). Treatment with histamine 2 antagonists or proton-pump inhibitors should be added in all women with severe NVP or HG (Table 5).
- Prescribe regular, high dose laxatives in all women with constipation or at risk of constipation (e.g. from serotonin antagonists)
- Assess women with NVP and HG for ptyalism and consider treatment with anticholinergic agents if severe or debilitating

EBR

CBR

CBR

Table 3a, 3b,3c : Oral antiemetic medications for mild-moderate NVP.

Dosing: BD- twice a day, TDS-three times per day, QID-four times per day, max-maximum recommended total daily dose.

Note: *Do not combine these agents with similar mechanism of action and side effects S-sedating, preferably use nocte only.

Table 3a Herbal/Vitamin	Ginger	Vitamin B6 (Pyridoxine)
Mechanism of action	Improvement in gastrointestinal motility: weak effect on cholinergic M3 receptors and serotonergic 5-HT3 and 5-HT4 receptors in the gut	Water soluble vitamin, inhibits H1 receptor, acts indirectly on vestibular system, some inhibition of muscarinic receptors to decrease stimulation of vomiting centre
Evidence for efficacy	↓ N but not V Superior to placebo Equal to Vitamin B6, dimenhydrinate, metoclopramide, doxylamine, P6 (LOE- II)	↓ N but not V Less effective than dimenhydrinate (LOE- I)
Recommended [maximum daily dose]	Use standardised products rather than foods e.g. 250 mg TDS-QID [1000mg/day]	10 to 25 mg PO 3-4x/day [200 mg] Or 37.5 mg combined with ginger 600 mg up to 2x/day
Side effects	Heartburn	Sensory neuropathy has been reported with chronic intake of pyridoxine at doses >500 mg/day
Risk of teratogenesis	No increase	No increase
Practice points	Theoretical but unproven risk of bleeding risk by decreasing platelet-aggregation. May inhibit growth of Helicobacter Pylori	More effective when used in combination e.g. with doxylamine or dicyclomine (equivalent to metoclopramide)

Table 3b Histamine/Dopamine Antagonists	Doxylamine ^s / Diphenhydramine ^s Cyclizine ^s / Promethazine ^s	Metoclopramide
Mechanism of action	Indirectly affect the vestibular system, decreasing stimulation of the vomiting centre	Dopamine and serotonin receptor antagonist which stimulates upper gastrointestinal motility and acts on CNS vomiting centre
Evidence for efficacy	DOXYLAMINE: ↓N compared with placebo, with or without pyridoxine (LOE II) DIPHENHYDRAMINE/CYCLIZINE/ PROMETHAZINE: (LOE-III)	Equal to ondansetron for N but less effective for V (LOE-II)
Recommended [maximum daily dose] Use one of the following only- do not combine	DOXYLAMINE: 6.25-25 mg TDS [50 mg] DIPHENHYDRAMINE: 25-50 mg TDS [150 mg] CYCLIZINE: 12.5-50 mg TDS [150 mg] PROMETHAZINE: 25 mg TDS [75 mg]	10 mg TDS [30 mg]
Side effects	Sedation, anticholinergic effects	Initial -Dystonia, Akathisia, depression. Prolonged use: Rare: tardive dyskinesia
Risk of teratogenesis	No increase	No increase
Practice points	Doxylamine and diphenhydramine are available as a non-prescription sleeping tablets. These agents are sedating and best reserved for evening dosing.	Less sedation. To reduce the risk of extrapyramidal side effects- use for the shortest possible duration and lowest effective dose (see above)

Table 3c Phenothiazines*	Prochlorperazines
Mechanism of action	Central and peripheral dopamine antagonists
Evidence for efficacy	Superior to placebo for NVP (LOE-I)
Recommended dose [maximum daily dose]	5-10 mg TDS [30 mg]
Side effects	Sedation, akathisia, anticholinergic effects, hypotension Rare: dystonias, tardive dyskinesia with chronic use
Risk of teratogenesis	No increase
Practice points	Best reserved for evening dosing

Table 4: Oral antiemetic medications for severe NVP and HG

	Ondansetron	Corticosteroids
Mechanism of action	Central (medullary vomiting centre) and peripheral (small bowel) serotonin receptor blocker	Antiemetic effect on the chemoreceptor trigger zone in the brainstem
Evidence for efficacy	Superior to combination doxylamine/B6 for reduction in N and V [LOE-II] Superior to metoclopramide for reduction of V but not N in HG [LOE-II]	Improved sense of wellbeing, appetite and increased weight gain in HG patients No difference in days of hospital admission or readmission rates compared to placebo Equal to promethazine with fewer side-effects (LOE-I) Superior to IV metoclopramide (LOE-I)
Recommended dose [maximum daily dose]	4-8 mg up to TDS [16mg]	Prednisone 40-50 mg/day. May be commenced as hydrocortisone 100 mg IV BD [200mg]
Side effects	Constipation, headache, dizziness Rare: QT prolongation, serotonin syndrome in combination with other serotonergic drugs	Potential Cushing's syndrome, mood disturbance, hypertension, hyperglycemia
Risk of teratogenesis	Conflicting data. No overall risk in birth defects but a possible increased risk of cleft palate and ventricular septal defect when used in the first trimester (See above)	Possible increased risk of oral clefts when used < 10 week's gestation, but data are weak (See above)
Practice Points	No sedation Expensive Available as tablets, wafers and oral dispersible formulations Ensure concurrent management of constipation. Bowel obstruction has been reported Recommended as second line agents	Consider withholding until after 10 weeks gestation if alternate therapy an option Restrict to refractory cases Wean to 10 to 12.5 mg/day over 7 to 10 days then by 2.5 mg/day every 3 days to minimum effective dose. Increase folate to 5 mg, oral, once per day if prescribing steroids in first trimester

Table 5: Parenteral/subcutaneous antiemetics (141, 143) - for additional information see Tables 3a, 3b, 3c and 4

	Dosage [maximum daily dose]	Comments
Metoclopramide	10 mg IV TDS [0.5 mg/kg to max 30 mg] Or 1.2 to 1.8 mg/hour intravenously by infusion Or Subcutaneous infusion 20-40 mg/day	Slow IV over 2-20 min Sedation
Cyclizine	50 mg slow IV BD-TDS [150mg]	Severe sedation
Droperidol	0.5 to 1 mg/hour [25 mg]	Sedation
Promethazine	25 mg IM or IV TDS-QID [100 mg]	Sedation
Prochlorperazine	5 to 10 mg IV TDS-QID [30mg]	Sedation
Ondansetron	4-16 mg IV TDS [16mg] SC infusion 16-28 mg/day	Avoid in women with pre-existing QT prolongation IV doses > 8 mg (up to a maximum of 16 mg) should be infused over at least 15 minutes
Methylprednisolone	16 mg TDS for 48 to 72 hours [48mg]	As per oral corticosteroids
HYdrocortisone	100 mg IV BD [200mg]	

Table 6: Acid suppression for symptoms of gastroesophageal reflux (167-170)

Therapy	Dose	Risk	Comment
H2 antagonists	Famotidine 20 mg OD or BD Nizatadine 150MG OD or BD	No increase in congenital malformations	Well tolerated
Proton-pump inhibitors	Omeprazole 20 mg OD-BD Lansoprazole 30 mg OD-BD Rabeprazole 20 mg OD-BD Esomeprazole 40 mg OD-BD Pantoprazole 40 mg OD-BD	No increase in congenital malformations	Well tolerated

When should intravenous fluid and parental feeding be used for management of NVP and HG?

- Consider early treatment with IV fluids for women with dehydration or uncontrolled vomiting, including prior to the development of electrolyte deficiency. EBR
- IV fluids have been shown to reduce vomiting (56) and are therefore valuable for both outpatient and inpatient management of the symptoms of HG and severe NVP as well as associated dehydration and electrolyte disorders.
- The prescription of IV fluid therapy should take into account the degree of dehydration and any electrolyte disturbances (Table 7). Care needs to be taken using any dextrose based solution as Wernicke's encephalopathy may be precipitated in women with thiamine deficiency (57). In addition, in the setting of severe hyponatremia, serum sodium should not be corrected faster than 10mmol/L per 24 hours to prevent central pontine myelinolysis (58). Should ongoing fluid administration be required, fluid balance (input and output) should be monitored for the duration of the treatment cycle. IV fluid resuscitation with or without electrolyte (potassium, magnesium and phosphate) replacement should be prescribed as required. CPP
- IV fluid therapy should preferably be administered in an outpatient setting where available as this has been associated with equivalent patient satisfaction outcomes and lower total hospitalisation days (24, 59). EBR
- Clear pathways for access to outpatient fluid therapy can give women a sense of control over their symptoms which can be very helpful.
- HG leads to dehydration, fluid and electrolyte abnormalities, and inadequate nutrition. In severe cases, if antiemetic and steroid therapy has failed, nutritional support via enteral or parenteral routes may be required to adequately restore hydration, correct electrolyte imbalance and maintain nutrition.
- Due to their associated complications, cost burden, and high rates of patient dissatisfaction, the use of enteral and parenteral nutrition should be a last resort and trialled only if women are failing to respond to oral feeding and antiemetic therapy. Enteral nutrition would preferentially be recommended over TPN. CBR
- Patients commencing enteral or parenteral nutrition are at high risk of refeeding syndrome and need to be monitored closely, with a slow introduction of supplementation. EBR

Table 7: Recommendations for parenteral replacement of IV fluids and electrolytes K: potassium, Mg: magnesium

Type of fluid	Quantity/Rate	Comments
0.9% sodium chloride	1-2 L. Initial rate 1L/hour	Further IV fluids should be given at a rate of 1L/1-2 hours or slower to correct dehydration and electrolytes (see below)
4% dextrose and 0.18% sodium chloride or 5% dextrose	1 L. Initial rate 1L/2 hours.	Consider as an option if minimal oral intake, starvation or uncontrolled nausea and <u>only</u> after correction of thiamine deficiency (200-300mg IV) and exclusion of hyponatremia
Add electrolytes as required : these are high risk medications, administer as per local guidelines		
Potassium chloride	30-40 mmol/L. Maximum infusion rate 10mmol over 1 hour	Administer with caution. Preferred product is premixed 30mmol potassium chloride in 1 L bags of 0.9% sodium chloride. Use large peripheral vein or central venous access only.
Magnesium sulphate	10-20 mmol/ day over 20-40 minutes	Dilute with 100ml 0.9% sodium chloride. Use large peripheral vein or central venous access only.

When should termination of pregnancy be considered for NVP or HG?

For some women, termination of pregnancy is an appropriate therapy. Occasionally, failure of response to comprehensive treatment of HG may be life threatening, and in this instance, termination of pregnancy may be the only option for prolongation of the woman's life. In less severe cases, a decision for termination of pregnancy may be made after comprehensive management, including anti-emetics and corticosteroids have been trialled and the option of enteral or parenteral feeding has been considered. This management should include appropriate psychiatric and psychological care and support in a multidisciplinary environment. Failure of therapy should be clearly documented prior to consideration of medically-indicated termination of pregnancy (60, 61). CBR

What role does psychosocial assessment and support play in the management of NVP?

Women with severe NVP or HG have greater levels of depression and worsening symptoms are associated with greater severity and duration of both depression and anxiety.

- Women with HG or severe NVP should be screened for depression and associated mental distress at first presentation with a validated tool and this should be repeated as indicated, particularly if symptoms are severe and prolonged.

CBR

Women with elevated screening scores should be referred to a mental health professional. Social isolation is a major risk factor; social work review and support should be assessed in each case and whether responsibilities can be delegated to another member of the family (62).

- HG has a substantial financial impact upon the individual and upon the economy (63).

How should NVP/HG-associated gestational hyperthyroxinemia be managed?

- Do not measure TFTs in women with nausea and vomiting of pregnancy and no diagnostic criteria for HG.
- TSH should be measured in women with HG or NVP refractory to treatment or in women with signs and/or symptoms of thyrotoxicosis. If TSH is below the normal gestational corrected reference range, additional investigations should be performed to exclude an alternate cause. Management of women who have gestational hyperthyroxinemia is supportive as the condition is self-limiting and anti-thyroid medications are not required. Specialist referral is not required.

CBR

EBR

What impact does NVP and HG have on pregnancy and neonatal outcome

- Mild-moderate NVP without features of HG is associated with a favourable effect on the rate of miscarriage, congenital malformations, prematurity and childhood performance intelligence quotient (64).
- With current practice, severe cases of HG are more commonly associated with nutritional and electrolyte disturbance requiring intravenous hydration and electrolyte replacement, enteral feeding or total parental nutrition. Maternal death and other severe morbidity are now extremely rare with appropriate recognition and management.
- Women with severe NVP or HG should be considered at high risk of adverse maternal and fetal outcomes including preterm birth before 34 weeks, low birth weight, birth weight <10th centile, placental abruption and pre-eclampsia (65, 66). In women hospitalised for HG, inadequate weight gain in the first trimester and failure to achieve pre-pregnancy weight by week 13–18 was an independent predictor of SGA (59). They require quality, evidence based medical and antenatal care in an appropriate setting.
- A more recent cohort study specifically investigated the relationship between vomiting, not treated with anti-emetics, and birth weight (67). In contrast to the Norwegian Mother and Child Cohort study that included women who obtained treatment for NP and NVP, this study demonstrated a significant association between low birth weight and untreated vomiting in pregnancy (OR 3.5, $p = 0.03$).
- Women with severe NVP or HG should have fetal growth surveillance in the third trimester of pregnancy.
- Women with HG were found to have high rates of post-traumatic stress syndrome, with a number of associated negative outcomes including inability to breastfeed, marital problems, financial problems, and inability to self-care (62). Two small studies also suggest an increased risk for breast cancer (68, 69).

EBR

What is the recurrence risk of NVP and HG?

As NVP is such a common symptom, the risk of recurrence is very high (70). Women with severe NVP or HG should be counselled that the risk of recurrence in future pregnancies is high: up to 83% for NVP and 15-26% for HG.

EBR

What is the Role of Preconceptual Counselling for NVP and HG?

In subsequent pregnancies, early or even pre-emptive commencement of antiemetic therapy should be considered in women with previous severe NVP or HG (71).

CBR

Although there is no trial data to inform this area of practice, preconceptual counselling can provide information and reassurance to a woman previously affected by NVP or HG. It also allows planning for early, effective management if symptoms of NVP or HG occur.

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Appendices

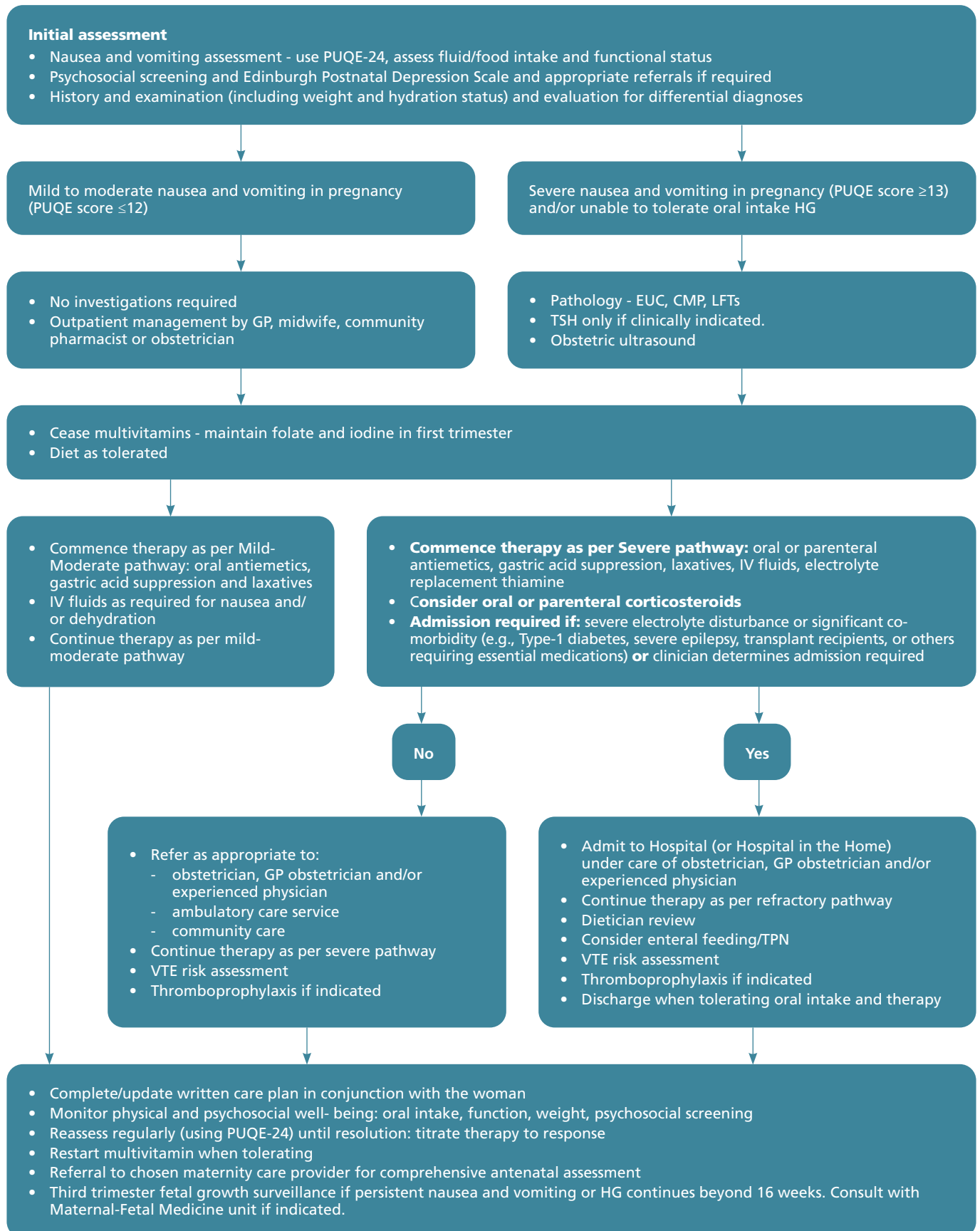
Management Algorithm (Part 1)

Management Algorithm (Part 2)

Patient Information Sheet

Individual Patient Management Plan

SOMANZ Management of NVP/HG (Part 1)



SOMANZ Management of NVP/HG (Part 2)

	Mild PUQE-24 ≤	Moderate PUQE-24 = 7 to 12	Severe (PUQE-24 ≥13) and/or inadequate oral intake or hyperemesis gravidarum – Outpatient management	Refractory symptoms or in hospital
Antiemetics and corticosteroids	<ul style="list-style-type: none"> ginger and/or pyridoxine (vitamin B6) 	One of the following: <ul style="list-style-type: none"> doxylamine (plus pyridoxine) cyclizine metoclopramide prochlorperazine diphenhydramine promethazine or <ul style="list-style-type: none"> ondansetron (plus laxative/s) 	<ul style="list-style-type: none"> ondansetron (plus laxative/s) Add additional antiemetics as required especially for night-time dosing: <ul style="list-style-type: none"> doxylamine (plus pyridoxine) or cyclizine or metoclopramide or prochlorperazine or diphenhydramine or prochlorperazine If significant symptoms persist: <ul style="list-style-type: none"> consider corticosteroids: Oral: prednisone/prednisolone or IV: methylprednisolone or hydrocortisone <ul style="list-style-type: none"> consider droperidol 	As for severe nausea and vomiting in pregnancy or hyperemesis gravidarum Convert to parenteral treatment if not tolerating oral Convert back to oral equivalent when suitable
Laxatives		Docusate 120mg oral once or twice a day and/or macrogol oral once or twice a day and/or lactulose 15 to 30mL oral once or twice a day		
Acid suppression	-	One of the following: H2 antagonist: famotidine, nizatidine or Proton pump inhibitor: esomeprazole, rabeprazole, omeprazole, lansoprazole	Cease H2 antagonist and commence proton pump inhibitor or Increase dose of proton pump inhibitor: Esomeprazole, rabeprazole, omeprazole, lansoprazole	Continue proton pump inhibitor IV if oral not tolerated: <ul style="list-style-type: none"> esomeprazole, pantoprazole, omeprazole
Intravenous (IV) therapy	-	IV fluids 1 to 3 times per week as required Add IV thiamine if poor oral intake or administering glucose		Continuous IV fluid and electrolyte replacement - add IV thiamine if poor oral intake or administering glucose
Additional therapies	-	-	Consider enteral nutrition VTE risk assessment and prophylaxis if indicated	Consider enteral or total parenteral nutrition VTE risk assessment and prophylaxis if indicated

Sickness and Vomiting in Pregnancy Patient Information

Many pregnant women feel sick (nausea) or vomit during early pregnancy. This can vary from mild when it can be considered a normal part of pregnancy. If you can continue to eat and drink even with sickness, this is considered reasonably normal. The exact cause of the sickness is not known but is probably due to the hormonal changes of early pregnancy.

It can occur more commonly in some families (genetic tendency), if you have twins or triplets, if your baby is a girl and if you had sickness and vomiting in your previous pregnancies. We don't really understand why some women suffer more, but the most important thing to know is that it's not your fault and it doesn't mean there is anything wrong with your pregnancy.

In this leaflet we answer some common questions about nausea and vomiting in pregnancy and provide some guidance for where you can get more information and help if you need it.

Although it is often called morning sickness, symptoms can occur at any time - not just in the morning. It usually starts from the early part of pregnancy and settles between 12 and 16 weeks. Rarely, women have some sickness throughout their entire pregnancy.

Even mild sickness and vomiting in pregnancy can be difficult to cope with. It can affect your mood, your work, your home situation and your ability to care for your family. If sickness and vomiting really interfering with your life, particularly your ability to eat and drink, you should seek help from your doctor or midwife.

What is hyperemesis gravidarum?

If you have severe sickness and vomiting for more than a few days, you may find it hard to drink anything leading to dehydration (lack of fluid in your body) and difficulty eating enough food, causing weight loss and vitamin deficiencies. This severe sickness and vomiting in pregnancy is known as **hyperemesis gravidarum (HG)**.

If you have these symptoms, even for more than a few days, you need urgent, expert medical help. Treatment is effective and protects you and your baby from complications. You should see your family doctor (GP), obstetrician or attend the Emergency Room at your local hospital for advice and help.

Do sickness and vomiting affect the baby?

Not usually. The baby gets nourishment from your body's reserves even though you may not eat well when you are vomiting. The effort of retching and vomiting does not harm your baby. In fact, some studies have shown that having sickness and vomiting in early pregnancy is a good indication that your pregnancy is healthy and will have a successful outcome.

Your baby may be affected if you develop hyperemesis gravidarum and become very ill with lack of fluid in the body (dehydration) which is not treated. In this case, the most likely problem is that your baby will have a low birth weight when he or she is born. However, not all babies born to women with hyperemesis gravidarum have a low birth weight.

Do I need any special tests?

If you have mild feelings of sickness (nausea) and vomiting during pregnancy, you do not usually need any specific tests or investigations.

Sometimes your doctor or midwife will suggest some tests:

- If your symptoms become more severe.
- If you are not able to keep any food or fluids down.
- If you start losing weight.

Investigations may include blood or urine tests to look for another cause for your nausea and vomiting or to check how your body is coping.

What can I do to help relieve sickness and vomiting?

In most cases, as the symptoms are often mild, no specific treatment is needed. However, there are certain things that you may like to try to help relieve your symptoms. They include the following:

- **Eating small but frequent meals** may help. Some people say that sickness is made worse by not eating anything at all. If you eat some food regularly, it may help to ease symptoms. Eat whatever you can, when you can. Don't worry too much about a balanced diet at this time. There may be some foods you really want and others you can't stand. Cold meals may be better if nausea is associated with food smells.

- **Ginger.** Some studies have shown that taking ginger tablets or syrup may be effective for relieving feelings of sickness (nausea) and vomiting in pregnancy. However, care should be taken, as the quality of ginger products varies. Before you take a ginger product, you should discuss this with a pharmacist, midwife or GP. Food containing ginger may also help.
- **Avoiding triggers.** Some women find that a trigger can set off the sickness. For example, a smell or emotional stress. If possible, avoid anything that may trigger your symptoms.
- **Having lots to drink** to avoid lack of fluid in the body (dehydration) may help. Drinking little and often rather than large amounts may help to prevent vomiting. Try to aim to drink at least one to two litres of some sort of fluid each day.
- **Rest.** Make sure that you have plenty of rest and sleep in early pregnancy. Being tired is thought to make nausea and vomiting during pregnancy worse.
- **Acupressure or seasickness bands** on your wrists may be helpful. These can be bought at your local pharmacy.

Note: Generally you should not use over-the-counter remedies for sickness and vomiting whilst you are pregnant unless recommended by your doctor, midwife or pharmacist.

When are anti-sickness medicines needed?

Anti-sickness medicine may be necessary and recommended if your symptoms are persistent and severe, or do not settle with the above measures. Although it is generally recommended to avoid medicines when you are pregnant, certain medicines have been used for a number of years to treat feelings of sickness and vomiting in pregnancy and are considered safe. Some of the more commonly used medicines are pyridoxine (vitamin B6), doxylamine, promethazine, cyclizine and prochlorperazine and there is no evidence that they harm a developing baby. If these are not helpful, metoclopramide or ondansetron, may be prescribed. Medicines that lower stomach acid and stop acid coming into your throat and mouth are often recommended if you have more severe sickness. For women with hyperemesis gravidarum, sometimes prednisolone may be used.

Always discuss with your doctor, community pharmacist or midwife before taking an anti-sickness medicine when you are pregnant.

They should inform you about any possible concerns regarding using medicines for sickness and vomiting during pregnancy. Feel free to ask them any questions you have before taking medicine in pregnancy.

It is best to use medication for the shortest time possible. For some women, medication may be needed for several weeks or even months until symptoms settle.

What if these treatments do not work very well?

A small number of women need to be seen at the hospital or Day Hospital facility to be given fluids by a drip. Admission to Hospital is sometimes needed if you do not respond to medication or can't keep it down. You may need to be admitted to hospital if you lose weight or can't keep enough fluid down and become too dry (dehydrated).

Other causes of vomiting

Remember, not all vomiting may be due to the pregnancy. You can still get other illnesses such as a tummy bug (gastroenteritis) or food poisoning. Sometimes a bladder or kidney infection can cause vomiting in pregnancy. You should see a doctor urgently if you develop any symptoms that you are worried about, particularly any of the following symptoms:

- Very dark urine or not passing any urine for more than eight hours.
- Stomach pains.
- High temperature (fever).
- Pain on passing urine.
- Headache not responding to paracetamol.
- Runny stools (diarrhea).
- Yellow skin (jaundice).
- Severe weakness or feeling faint.
- Blood in your vomit.
- Repeated, unstoppable vomiting.

Where can I get more information?

The following sites may be helpful if you want more information or support:

- SOMANZ Guideline for the management of nausea and vomiting in pregnancy. <https://www.somanz.org/content/uploads/2020/07/NVP-GUIDELINE-1.2.20-1.pdf>
- Hyperemesis Gravidarum Australia: <https://www.hyperemesisaustralia.org.au>
- HER Foundation <https://www.hyperemesis.org/>
- Pregnancy Sickness Support UK: <https://www.pregnancysicknesssupport.org.uk/>
- American College of Obstetrics and Gynecology: Morning Sickness: Nausea and Vomiting of Pregnancy: <https://www.acog.org/Patients/FAQs/Morning-Sickness-Nausea-and-Vomiting-of-Pregnancy>
- Expert advice about medicine use in pregnancy is available through various Women's hospitals or specific organisations such as Mothersafe NSW or the Organization of Teratology Information Specialists (OTIS)

Various online forums and blogs are available for women to share their experiences. We cannot recommend individual sites as they do not contain supervised content.

Sickness in Pregnancy Plan

Date: _____

Doctor: _____

Contact: _____

Patient Label

My medications for sickness, vomiting and acid reflux

	Morning	Middle of Day	Evening	Bedtime
For sickness or dry heaves (nausea or vomiting or retching)				
For stomach acid (reflux)				
For constipation				
Other				

If you feel worse:

.....

.....

.....

If you feel better:

.....

.....

.....

Continued over >

Would you like to tell us how you're going?

Eating and drinking:

Work or study:

Family:

Mood:

Did you have drip (IV) fluids this week? If so, when? Did it help?
